ARCHEOMETRY OF CELTIC REFRACTORY CRUCIBLES FROM BRATISLAVA'S OPPIDUM

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During the younger La Tène period, the rise of Celtic fortified centre (oppidum) in Bratislava's surroundings was related to migration of Celtic tribes in central Danubian area. The position of the oppidum on the crossroads of trade channels crossing Alps and Carpathians was of great strategic and economic importance. This importance is documented by the discovery of numerous finds of artefacts and objects associated with craftwork. Except of pottery kilns and ceramics fragments also numerous fragments of metalworking (slags, refractory ceramics) and coinage industry (dosing plates) has been found (PIETA & ZACHAR, 1993; ČAMBAL, 2004).

In general for this research, six fragments of Celtic ceramic crucibles found on Ventúrska street in Bratislava, were studied by standard mineralogical analytical techniques, which included optical microscopy, powder X-ray diffraction analyses (PXRD), scanning electron microscopy (SEM) and thermal analysis. PXRD and optical microscopy show that crucibles consist of a mixture of quartz, plagioclase, potassium feldspars, micas, mullite as well as an amorphous phase, *e.g.* glass. A greenish layer covers the interior of some shards. This layer is composed of atacamite or brochantite and linarite, respectively. Formation of these minerals was considered in another paper (OZDÍN & GREGOR, in press). Based upon the mineralogical composition of the shards and the greenish cover, we presume that the ceramic vessels were used as refractory crucibles for melting copper-bearing ores. The primary firing temperature of the crucibles is difficult to establish because their subsequent use for ore-processing when the temperature reached at least 1000–1100 (± 50) °C. Based upon thermal analysis and optical microscopy, we presume that the melting of copper-bearing mineral took place in reducing atmosphere. Due to the intense thermal alteration, it is difficult to establish the geological source for the raw clays (which might come from the alluvial sediments of the Danube). Graphite added as a temper could be imported from south Bohemia (Czech Republic) as in Bratislava's oppidum numerous founds of graphitic ceramics with craftwork marks typical for Celtic inhabitation from that area has been found.

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